

# **Exhibit 2**

**UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF SOUTH CAROLINA  
COLUMBIA DIVISION**

THE SOUTH CAROLINA STATE  
CONFERENCE OF THE NAACP, and

TAIWAN SCOTT, on behalf of himself and  
all other similarly situated persons,

Plaintiffs,

v.

THOMAS C. ALEXANDER, in his official  
capacity as President of the Senate; LUKE  
A. RANKIN, in his official capacity as  
Chairman of the Senate Judiciary  
Committee; JAMES H. LUCAS, in his  
official capacity as Speaker of the House of  
Representatives; CHRIS MURPHY, in his  
official capacity as Chairman of the House  
of Representatives Judiciary Committee;  
WALLACE H. JORDAN, in his official  
capacity as Chairman of the House of  
Representatives Elections Law  
Subcommittee; HOWARD KNAPP, in his  
official capacity as interim Executive  
Director of the South Carolina State Election  
Commission; JOHN WELLS, Chair,  
JOANNE DAY, CLIFFORD J. EDLER,  
LINDA MCCALL, and SCOTT MOSELEY,  
in their official capacities as members of the  
South Carolina Election Commission,

Defendants.

**Case No. 3-21-cv-03302-MBS-  
TJH-RMG**

**THREE-JUDGE PANEL**

**Rebuttal Report of Baodong Liu, Ph.D. re Congressional Map**

**May 2, 2022**

I have been asked to express my opinion about the April 18, 2022 report of Mr. Sean P. Trende, an expert for the Defendants in the above captioned litigation, and to determine whether it supports or undermines my own report, findings, and opinions in this case regarding the challenged Congressional districts. This rebuttal report is divided into three sections. The first section summarizes the main differences between Mr. Trende report and my own expert report disclosed on April 6. The second section points out the errors in Mr. Trende's applications of redistricting principles. The third section provides general comments about the limitations of Mr. Trende's methodology to assess the Enacted Congressional Plan, as well as the misleading conclusions derived from his analyses.

### **The Main Disagreements between Mr. Trende's Report and My Own Report**

Mr. Trende focuses his attention on the extent to which the Enacted Map differs from what he called "the Benchmark Plan" put "in effect from 2012 to 2020" (Trende p. 6). In doing so, he concludes that "The Enacted Map generally reflects only modest changes from the Benchmark Plan" (Trende p. 7). This conclusion is based on the following empirical observations:

- The Enacted Map "retains high percentages of the cores of all of the Benchmark Districts" (Trende p. 7)
- In the places where the Enacted Map modified the Benchmark Map, according to Trende, the Enacted Map (Trende p. 7):
  1. Reduces the number of split counties;
  2. Reduces the number of split Voting Tabulation Districts (VTDs) (which he incorrectly treats as synonymous with precincts);
  3. Repairs the split precincts (to make them whole); and
  4. Leads to minimum changes to the Black Voting Age Populations (BVAP) of the districts (Trende p. 22)

Despite my concerns about his methodology and the data he relied upon described below, Mr. Trende and I agree that the Enacted Plan makes District 1 "meaningfully more Republican" (Trende p. 35; also see Liu p. 17). Mr. Trende and I also agree that the Enacted Plan has made counties such as Berkeley County whole (Trende p. 33; Liu p. 17 & fn. 18).

The major differences between the findings in Mr. Trende's report and my own, however, are that I relied extensively on empirical analyses of both the role of race and party to draw my conclusion that "there is strong empirical evidence that race, rather than presumed party affiliation, is a driving factor in whether voters remain or are moved in and out of the districts challenged by Plaintiffs, particularly CDs 1 and 2, in the Enacted Plan" (Liu p. 21).

The reason why Mr. Trende failed to account for the role of race vis-à-vis that of party is because of his flawed methodology. As shown in **Table 1** below, Mr. Trende did not engage in any racially polarized voting (RPV) analysis which is essential for any expert witness responsible for providing empirical evidence concerning the role of race in voting-rights related lawsuits.<sup>1</sup>

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<sup>1</sup> As I indicated in my report, "Though Plaintiffs have not brought a Section 2 claim, their theory is that the effect of any cracking of Black voters must be considered with the existence of any RPV. If Black voters are cracked and are a minority of voters in a congressional district in which white voters are the

**Table 1: The Methodologies of Trende and Liu, Compared<sup>2</sup>**

	Trende Report	Liu Report
Racially Polarized Voting	No	Yes
Biracial Congressional Elections	No	Yes
Biracial State-wide Elections	No#	Yes
Effectiveness Analysis	No	Yes
Partisan Primary Election	No	Yes
Party v. Race	No	Yes

# The only state-wide election Mr. Trende analyzed was the 2020 presidential election. But he did not examine the extent to which that election exhibited RPV between Black and white voters.

Mr. Trende did not provide empirical results for how any Congressional elections in South Carolina (i.e., endogenous elections) may or may not reveal the clear differing candidate preference of Black and white voters. Even for the only statewide election he analyzed (i.e., the 2020 presidential election), he simply reported the levels of support for then presidential candidate Biden in various districts under the Enacted Map and the Benchmark Map. Mr. Trende did not include a single biracial election in his dataset that would allow him to assess the role of race.

Mr. Trende's report did not engage in any comparative study of the Enacted Plan with the alternative plans provided by Plaintiff, other members of the public, and Senator Harpootlian. Thus, his analysis is not based on any scientific rigor. At most his report justifies the lines and the voters placed within or without them in Enacted Plan based on a review of selective criteria. As I will illustrate below, even by using this limited criterion, such as whether the Enacted Map reduces the number of split counties in relation to the Benchmark Map, his report failed to address the role of race, and therefore, only led to misleading conclusions.

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majority or supermajority of voters, RPV can function to deny or diminish Black voters' ability to elect or otherwise impact the elections of their preferred candidates. In other words, without RPV, the cracking of Black voters (if proved to be the case) would not have an effect on the opportunity of Black voters to elect candidate of their own choice. If Black and white voters in a disputed jurisdiction usually share the same preference for a particular candidate, or put another way, a sufficient number of white voters cross over usually to support the candidate preferred by Black voters (i.e., no RPV), then regardless how a district composed (including whether Black voters are cracked), the election outcomes should be consistent before and after the redistricting process" (Liu p. 6).

<sup>2</sup> Equal population, compactness, and incumbent protection are also addressed by Mr. Trende. They are not examined in my reports, as I understand that they are discussed by other experts retained by the counsel for the Plaintiffs.

### The Errors in Mr. Trende's Applications of Redistricting Principles

Four principles governing the redistricting process were identified by Mr. Trende, who referenced *Colleton County Council v. McConnell*, 201 F.Supp.2D 618 (2012) to identify these principles:

- Recognizing communities of interest;
- Preserving district cores;
- Respecting county and municipal boundaries, as well as geographic boundaries; and
- Keeping incumbents' residences in their districts (Trende p. 9).

Furthermore, Mr. Trende stressed that “The [South Carolina State] House guidelines further specify that county, municipal, and precinct boundaries may be relevant when considering communities of interest; the [State] Senate guidelines make minimizing the number of splits at those three levels separate criteria” (Trende p. 9). To evaluate whether the Enacted Plan followed these principles, Mr. Trende examined the extent to which the number of split counties is reduced in the Enacted Plan, compared to the Benchmark Plan.<sup>3</sup>

Mr. Trende rightly indicated that the number of split counties has been reduced to 10 from 12 under the Enacted Plan (Trende p. 7). However, he did not examine what counties were split (or why) under the Enacted Plan. If “recognizing communities of interest” and “respecting county and municipal boundaries” are both important redistricting principles that explain the congressional lines at issue, then it is necessary to consider whether any communities of interest and/or municipalities with significant Black populations in South Carolina have been singled out to be the likely recipients of the violation of these principles. **Table 2** lists all 10 counties that are still split under the Enacted Plan.

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<sup>3</sup> Mr. Trende also used the reduction of the number of split precincts as the justification for why the Enacted Plan improved over the Benchmark Plan. He, however, seemed to equate precincts VTDs. Census geo-units, namely VTDs, usually are the unit for RPV analysts to match Census data with political precincts where voters cast their ballot in elections. But these two units are not always matched exactly. Moreover, the boundaries of precincts may shift within a 10-year span while the boundaries of VTDs always are fixed between two census rounds.

**Table 2: Split Counties based on Enacted Plan**

County	Districts
Charleston	1, 6
Colleton	1, 6
Dorchester	1, 6
Jasper	1, 6
Orangeburg	2, 6
Richland	2, 6
Greenville	3, 4
Spartanburg	4, 5
Sumter	5, 6
Florence	6, 7

The first four counties in the list (Charleston, Colleton, Dorchester and Jasper) are split between CDs 1 and 6. Four other counties in the list (Orangeburg, Richland, Sumter and Florence) also have portions in CD 6. Clearly, under the Enacted Plan the bulk of counties that are split involve CDs 1 and 6.

Additionally, I consider the racial makeup of the counties that are split under the Enacted Plan. **Table 3** shows detailed racial breakdowns in these split counties.

**Table 3: The Racial Composition of Split Counties, Enacted Plan**

County	VAP	Black	White	Black %	White %
Charleston	327819	74641	219685	22.77%	67.01%
Colleton	30042	10475	17835	34.87%	59.37%
Dorchester	115215	31948	77329	27.73%	67.12%
Florence	104040	43548	56968	41.86%	54.76%
Greenville	398064	74441	290451	18.70%	72.97%
Jasper	21314	7767	11616	36.44%	54.50%
Orangeburg	64365	39634	22803	61.58%	35.43%
Richland	319486	149669	153216	46.85%	47.96%
Spartanburg	251587	50922	171238	20.24%	68.06%
Sumter	73918	34919	34358	47.24%	46.48%

Seven out of the 10 split counties have BVAPs greater than 25.28% --- the share of BVAP at the state level according to the 2020 Census.<sup>4</sup> Three of them have BVAPs of more than 41% of the total VAP. In short, the counties that are split have a larger share of Black voters than the state BVAP share. Even in Charleston County, which has a BVAP of 22.77% (smaller than the state

<sup>4</sup> The BVAP numbers reported in the table are based on any-part BVAP (see Liu p.13, footnote 15).

BVAP share as a whole), there are a total of 327,819 eligible Black voters, the second highest number of eligible Black voters among the 10 split counties. **Figure 1** displays visually how Black and white voters are distributed differently in the split counties as opposed to non-split counties.

Figure 1: Split Counties v. Non-Split Counties

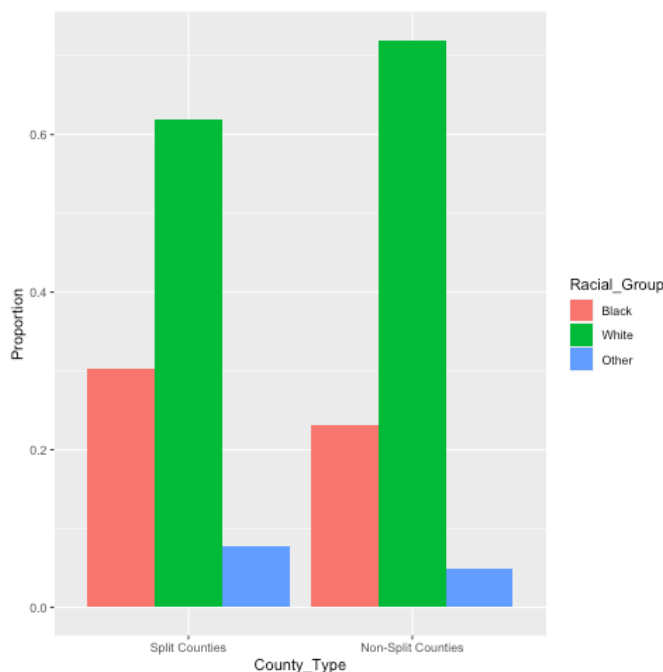


Figure 1 compares the 10 split counties with those 36 counties that are whole according to the Enacted Plan. Black eligible voters are about 30% of the total voters in the 10 split counties, as indicated by the red bar to the left of the figure. With respect to the 36 non-split counties, Black voters are only about 23% of the total voters, as indicated by the red bar to the right of the Figure. In short, Black eligible voters are disproportionately more likely to be in the split-county category than in the non-split-county category under the Enacted Map.

In contrast, white eligible voters makeup just over 60% of the split county category and they have a much higher share in the non-split-county category, as high as over 70%. In other words, white voters are much more likely to be in the non-split-county category than in the split-county category. All in all, the disproportionally greater chance for Black eligible voters to be put in the split-county category by the Enacted Plan is reflected in Figure 1. To prove this disproportionality statistically, we can also use a statistical analysis called “Pearson’s chi-squared test”, as shown below:

**Chi-squared = 25930, df = 1, p-value < 2.2e-16**  
**95 percent confidence interval: (0.0718 0.0736)**

The above Pearson's chi-square statistics showed that Black voters in South Carolina have at least more than 7.18% probability of being assigned to the split-county category under the Enacted Plan than to the non-split-county category. Statistically, the difference cannot be explained by random factor alone ( $p < .001$ ).

The only place where Mr. Trende discusses the role of race in his report is where he indicates that the Enacted Plan "results in minimal changes to the Black Voting Age Populations (BVAPs) of the districts" (Trende p. 22). For him, as long as the newly drawn districts do not drastically change the ratios of BVAPs in districts that pre-existed in the Benchmark Map, the Enacted Plan can then be described as following the redistricting principles of respecting communities of interest and respecting county and municipal boundaries. The split of Black voters between CD 1 and CD 6 is simply explained by Mr. Trende as conforming "with natural geographic boundaries" (Trende p. 34) or making County (such as Berkeley County) whole (Trende p. 33), or repairing the precincts. For Mr. Trende, Black voters' communities of interest can be sacrificed for the sake of "natural geographic boundaries" or making his selective counties (e.g., Berkeley) whole, but not keeping whole other counties with larger shares/size of Black voters (e.g., Charleston).

### **The Misleading Findings and Conclusions of the Trende Report on the Role of Partisan Gerrymandering**

Mr. Trende also attempts to justify the Enacted Plan based on the extent to which the cores of the Congressional Districts based on the Benchmark Map are retained in the new plan (see Table 3, Trende p. 17). Mr. Trende neither conducted an analysis of the racial composition of the cores of districts, nor compared the likely party affiliation of voters inside the cores. Thus, his report does not have the vigor to attribute the Enacted Plan to partisan or racial consideration (or both). Unlike my report which empirically compared and contrasted the racial and partisan makeup of voters, Mr. Trende's entire report did not evaluate race and party simultaneously.<sup>5</sup> For example, looking at the 2018 gubernatorial primary, I investigated in the Enacted CD 1 what kind of voters, in terms of both race and participation in the Democratic and Republican primary elections, are kept in the "core". More specifically, I found that "white Democratic voters are 17.3% of the total voters that remained in CD 1 while only 11.1% of these 'kept-in' voters are Black Democratic voters" (Liu p.16).

Using President Biden's 2020 vote shares in various districts, Mr. Trende indicated that CD 1 based on the Enacted Plan reduced Biden's vote share to 45.6% and made "the First District on net three points more Republican on the two-party vote share" (Trende p. 35). While the Republican advantage in District 1 is undeniable, Mr. Trende also made the following misleading claim:

"All told, 140,489 residents are moved from the First to the Sixth, of whom 113,531 are of voting age. Of these voting-age residents, 63.9% are non-Hispanic White, while 23.4% are Black. This compares to an overall combined BVAP in Charleston and Dorchester

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<sup>5</sup> Even if one focuses on racial composition alone, it is clear that the Enacted Plan drew the core of CD 1 from the envelop of six counties much in a way that is more favorable to white voters than to Black voters, as my report empirically showed (see Table 6, Liu p. 16).

Counties of 22.5%, so the net effect of these moves on the racial composition of these districts is minimal” (Trende p. 35).

This statement is misleading because using the movement of voters from Charleston and Dorchester counties does not tell us the whole story of how CDs 1 and 6 are constructed in the Enacted Plan. There are also voters from Berkeley County that are moved from CD 6 to CD 1. Mr. Trende indicates that the BVAP of Charleston and Dorchester counties is 22.5%, but many of those Black voters were already in CD 6. Therefore the BVAP of all the areas in those counties that were available to be moved into CD 6, but was not, was only about 12%.

Furthermore, based on my empirical analysis that uses the actual racial turnout data from the 2018 primaries, “with respect to voters in the same Democratic Party, white Democratic voters (68.99%) are much more likely to be assigned to CD 1 from the envelop [of CD 1] than Black Democratic voters (50.65%)” (Liu p. 20). In other words, it is mainly the focus on the race of voters rather than their likely party affiliation that determines how CD 1 is constructed.

### **Conclusion**

While Mr. Trende correctly indicated in his report that the number of split counties is reduced from 12 to 10 in the Enacted Plan, he failed to examine the internal racial compositions of those counties that remained split between the CDs, particularly CD 1 and CD 6. The fact that it is Black voters who are more likely to be the target of split counties reveals that race is still the major factor in how the new congressional districts in the Enacted Plan are constructed. Mr. Trende’s report also lacks scientific rigor due to its flawed methodology that ignores empirical analyses of racially polarized voting, the levels of effectiveness of competing redistricting plans for Black voters to elect or otherwise impact the elections of the candidate of their choice, and the testing of the roles of race vis-à-vis party in South Carolina. His flawed method also led to many misleading conclusions about the Republican advantage in CD 1 while (mis)applying certain redistricting principles to downplay the role of the racial makeup of voters in counties and precincts that were moved in or out or remained in CDs in the Enacted Plan.

I reserve the right to continue to supplement my report in light of additional facts, testimony and/or materials that may come to light.

Pursuant to 28 U.S.C. 1746, I declare under penalty of perjury of the laws of the United States that the foregoing is true and correct according to the best of my knowledge, information, and belief.

Executed on: Date: May 2, 2022

A handwritten signature in black ink, appearing to be 'Baodong Liu', written over a horizontal line.

**Baodong Liu, Ph.D.**